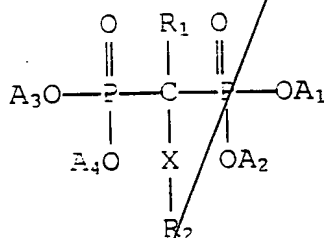


AMENDED CLAIMS

Claims

1. Use of bisphosphonic acids and the derivatives thereof for the production of pharmaceutical preparations for prevention and/or treatment of autoimmune diseases and/or allergies, characterised in that as bisphosphonic acids and derivatives thereof are used:

- Bisphosphonic acids and their derivatives of the general formula:



are used, in which

A₁, A₂, A₃, A₄, which may be identical or different, may mean hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted aryl, substituted or unsubstituted aralkyl, substituted or unsubstituted cycloalkyl or a substituted or unsubstituted heterocyclic residue, a metal of main group 1, 2 or 3 of the periodic system, such as Na, K, Ca, Mg, Al, as well as substituted or unsubstituted ammonium or ammonium compounds derived from ethylene diamine or amino acids,

X, which may also be absent, may mean alkylene alkenylene or hydroxyalkylene,

R₁, R₂, which may be identical or different, may mean H, OH, NH₂, substituted or unsubstituted acyl, substituted or unsubstituted alkyl, substituted or unsubstituted aryl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted aralkyl or a substituted or unsubstituted heterocyclic residue and further -SR₃, Cl and -NR₃R₄, in which

R₃, R₄,

which may be identical or different, may mean H, OH, substituted or unsubstituted acyl, substituted or unsubstituted alkyl, substituted or unsubstituted aryl, substituted or unsubstituted aralkyl, substituted or unsubstituted cycloalkyl or a substituted or unsubstituted heterocyclic residue,

- and or their pharmaceutically compatible salts, esters thereof as well as salts of esters
- and/or compounds which, on administration, form the compounds to be administered as metabolites or catabolites,

wherein the bisphosphonic acids and/or their derivatives and/or the compounds which on administration form the suitable metabolites or catabolites which correspond to the above bisphosphonic acids and their derivatives are used in combination with the specific autoantigens for the prevention and treatment of the particular autoimmune disorder, or

in combination with the specific allergens for the prevention and treatment of the particular allergy, wherein, instead of the particular autoantigens or allergens, wherein it is also possible to use fragments or derivatives thereof and the analogues and fragments thereof of the autoantigens or allergens instead of the autoantigens or allergenes, providing that the mentioned substances respectively exhibit the same immunological characteristics as the corresponding whole molecules.

2. Use of bisphosphonic acids as well as their derivatives according to claim 1, characterised in that, in the general formula (I)

A₁, A₂, A₃, A₄, which may be identical or different, may mean hydrogen, an alkyl residue having 1 to 12 carbon atoms, which may be branched or unbranched, an aryl residue, aralkyl residue, cycloalkyl residue or a

heterocyclic residue, wherein these residues may additionally be substituted by functional groups, a metal of main group 1, 2 or 3 of the periodic system, such as Na, K, Ca, Mg, Al, as well as substituted or unsubstituted ammonium or ammonium compounds derived from ethylene diamine or amino acids,

R₁,

may mean H, OH, NH₂,

X,

which may also be absent, may mean alkylene, alkenylene or hydroxyalkylene, in each case having 1 to 12 carbon atoms,

R₂,

may mean H, OH, NH₂, an alkyl residue having 1 to 12 carbon atoms, which may be branched or unbranched, an aryl residue, aralkyl residue, cycloalkyl residue or a heterocyclic residue, wherein these residues may be substituted by functional groups, or furthermore -SR₃, Cl and -NR₃R₄, in which

R₃, R₄,

which may be identical or different, may mean H, OH, an alkyl residue having 1 to 12 carbon atoms, which may be branched or unbranched, an aryl residue, aralkyl residue, cycloalkyl residue or a heterocyclic residue, wherein these residues may be substituted by functional groups.

3. Use of bisphosphonic acids as well as their derivatives according to claim 1, characterised in that, in general formula (I)

A₁, A₂, A₃, A₄, which may be identical or different may mean hydrogen, an alkyl residue having 1 to 12 carbon atoms, which may be branched or unbranched, an aryl residue, aralkyl residue, cycloalkyl residue or a heterocyclic residue, wherein these

residues may be substituted by functional groups, a metal of main group 1, 2 or 3 of the periodic system, such as Na, K, Ca. Mg, Al, as well as substituted or unsubstituted ammonium or ammonium compounds derived from ethylene diamine or amino acids,

R₁,

X,

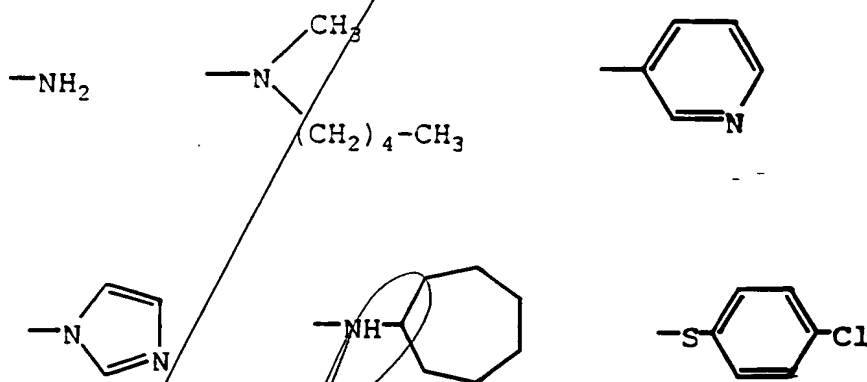
R₂

may mean H, OH,

which may also be absent, may mean

(CH₂)₁₋₅, amino,

may mean



4. Use of bisphosphonic acids and the derivatives thereof in combination with autoantigens or allergens for the production of pharmaceutical preparations for the prevention and/or treatment of autoimmune conditions and/or allergies according to claim 1 to 3, characterised in that the following are used for the treatment of

multiple sclerosis

rheumatoid arthritis
Hashimoto thyroiditis
myasthenia gravis
lupus erythematosus
diabetes mellitus

primary biliary
cirrhosis

myelin basic protein (MBP),
further extracts from nervous
system tissue,
type I, II or III collagen,
thyroglobulin,
acetylcholine receptor protein,
DNA,
islet cell extracts, human
insulin,
liver extracts,

active chronic hepatitis	liver cell extracts,
adrenalitis/Addison's	adrenal cortex extracts,
disease	
polymyositis	skin extracts, muscle extracts,
dermatomyositis	muscle and/or skin extracts,
autoimmune haemolytic	haemopoetic cell line extracts,
anaemia	
myocarditis	heart extracts,
myopericarditis	
scleroderma	skin extracts, skin cell
	extracts,
uveitis	eye lens proteins,
(phacouveitis,	S-antigens, S-antigen
sympathetic	mixtures,
ophtalmia)	
pemphigus vulgaris	skin extracts,
pemphigoid	skin extracts,
pernicious anaemia	gastric cell extracts,
	parietal cell extracts,
	intrinsic factor,
	gastric cell extracts,
autoimmune atrophic	
gastritis	intestinal extracts,
Crohn's disease	intestinal extracts
colitis ulcerosa	allergy-specific allergens.
allergies	

5. Use of bisphosphonic acids and the derivatives thereof for the productions of pharmaceutical preparations for the prevention and/or treatment of autoimmune conditions and/or allergies according to claim 1 to 3, characterised in that the combination preparations are administered in solid form, as ointments, as solutions or as sprays.

add B4

add E3

Ins B3